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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,577	11/09/2001	Takashi Hiroi	501.40830VX1	5835

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ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER

STREGE, JOHN B

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,577 ✓

Applicant(s)

HIROI ET AL.

Examiner

John B. Strege

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/986,299.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

In response to the Applicant's amendment received 12/3/04, all requested changes to the claims have been entered.

Applicant's arguments filed 12/3/04 regarding the provisional double patenting have been fully considered but they are not persuasive. Applicants argue that it is not proper in terms of a double patenting rejection to contend that method claims of one patent can be utilized to reject apparatus claims of another patent. However, it would be obvious to one of ordinary skill in the art of semiconductor inspection using image processing to develop a method given an apparatus or vice versa and therefore the rejection is respectfully maintained regarding the new claims.

Applicant's arguments with respect to the art rejections of claims 16-27 have been considered but are moot in view of the new ground(s) of rejection.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 29-38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 28-30, and 38-39 of copending Application No. 09986299 in view of Gallarda et al. USPN 6,539,106 (hereinafter "Gallarda"). The instant application and application number 09986299 are obvious variations of each other (see for example claim 29 of the instant application and claim 28 of 09986299). For the mapping the claims referred to in the parentheses are from the application 09986299 while the claims referred to outside the parentheses are from the instant application.

Claim 29 discloses a pattern inspection apparatus comprising (claim 28 discloses a pattern inspection method – it would be obvious to one of ordinary skill in the art of inspection using image processing to design an apparatus given a method)

image detecting means for attaining a digital image of an object substrate on which a pattern is formed through microscopic observation thereof (claim 28 discloses attaining a digital image of an object substrate through microscopic observation thereof)

defect detecting means for detecting defects of the pattern formed on said object substrate by comparing the digital image attained by the image detecting means with a reference image while masking a pre-registered region or a pattern matching with a pre-registered pattern (claim 28 discloses detecting defects of a pattern formed on said object substrate by comparing said digital image with a reference image stored in a memory while masking a pre-registered region or a pattern matching with a pre-registered pattern)

and output means for outputting data regarding the defects detected by the defect detecting means including digital images of said defects detected by masking and the postional distribution data thereof in a map form (claim 28 discloses and outputting an image of a defect among the defects detected together with positional distribution data thereof on said object substrate on a display screen – it would be obvious given that the defect data and position are displayed to display the data in map form as shown by Gallarda)

Gallarda discloses outputting a defect map to a display with positional information of the defect (figure 3 numeral 345), thus Gallarda is outputting an image of a defect together with positional information.

Gallarda, the instant application, and 09986299 are all analogous art because they are all from the same field of endeavor of using image processing to detect defects.

At the time of the invention it would have been obvious to one of ordinary skill in the art to output defect information and defect position information using a defect map. Thus it would have been obvious to one of ordinary skill in the art to devise the pattern inspection method of claim 29 of the instant application given the pattern inspection apparatus of claim 28 of application 09/986,299.

Claim 30 of the instant application maps to claim 29 of application 09986299.

Claim 31 is mapped to claim 30 of application 09986299.

Claims 32-36 contain similar limitations to claim 29-31, thus they can be mapped to the corresponding limitations of application 09986299 in the same manner.

Claim 37 is similar to claim 29 with the additional limitations of a defect extracting means and defect classifying means. Claim 38 of application 09986299 is similar to claim 28 (of application 09986299) and contains the additional limitation of extracting and classifying defects. Thus claim 37 of the instant application can be mapped to claim 38 of application 09986299.

Claim 38 is mapped to claim 39 of application 09986299.

This is a provisional obviousness-type double patenting rejection.

Claim Objections

3. Claim 37 is objected to because of the following informalities: on line 8 the word "locating" should be changed to --located—to make the limitation grammatically correct. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 28-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Gallarda et al. USPN 6,539,106 (hereinafter "Gallarda").

Regarding claim 29, Gallarda discloses a pattern inspection apparatus comprising: image detecting means for attaining a digital image of an object substrate on which a pattern is formed through microscopic observation thereof (col. 3 lines 23-29, and col. 16 lines 27-34 disclose that the test image can be from a scanning-electron-microscope); defect detecting means for detecting defects of the pattern formed on said object substrate by comparing the digital image attained by the image detecting means with a reference image while masking a pre-registered region or a pattern matching with a pre-registered pattern (col. 3 lines 19-55 disclose preparing a reference image and a test image, extracting features from the reference image and extracting features from the test image, and comparing features of the reference image and of the test image to identify defects, wherein the extracting features from an image can comprise matching a feature template in the image and identifying features in the image that match the feature-template [masking]); and output means for outputting data regarding the defects detected by the defect detecting means including digital images of said defects detected by masking and the positional distribution data thereof in a map form (figure 3 numeral 345 discloses a display for outputting a defect map, defect location, size, type, etc.).

Regarding claim 28, Gallarda discloses an image detecting part for detecting a digital image of an object substrate (col. 3 lines 23-29, and col. 16 lines 27-34 disclose that the test image is digital); a memory part for storing coordinate data, pattern data or feature quantity data of a non-inspection region to be masked in the object substrate on which a pattern is formed (a template is disclosed which is a mask [col. 3 lines 53-55],

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the template image is stored in memory [col. 6 lines 6-15]); a defect judging part in which the digital image detected by the image detecting part is examined in a state that a region matching with a condition stored in the memory part is masked and detecting a defect (col. 3 lines 19-63); and a display having a screen on which a digital image of the detected defect is displayed together with positional information of the detected defect in a map form (figure 3 numeral 345).

Regarding claim 30, Gallarda discloses that the reference image and test image can be obtained using a scanning-electron-microscope (col. 16 line10-34) and a feature template can be used to aid in the feature extraction for a particular type of image can be used to extract the features (col. 17 lines 45-59), thus it is inherent that if the feature template is to be used with a microscopic reference and test images then it must be set up using a microscopic image.

Regarding claim 31, Gallarda discloses in figure 3 numeral 345 that a defect map, defect location, defect size, defect type, etc. are displayed.

Claims 32 and 34 are similar to claim 29 with the additional limitation of a defect extracting means. Gallarda discloses a defect extraction means (col. 3 lines 19-29). The rest of the limitations have already been addressed above.

Regarding claims 33 and 35, Gallarda discloses that the reference image and test image can be obtained using a scanning-electron-microscope (col. 16 line10-34) and a feature template can be used to aid in the feature extraction for a particular type of image can be used to extract the features (col. 17 lines 45-59), thus it is inherent that

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if the feature template is to be used with a microscopic reference and test images then it must be set up using a microscopic image.

Regarding claim 36, Gallarda discloses displaying defect data such as a defect map, defect location, defect size, defect type, etc (figure 3 numeral 345).

Claim 37 is similar to claim 34 with the additional limitations of defect classifying means for classifying the extracted defects by using the feature quantity data; and output means for outputting class data of each of the defects classified by the defect classifying means together with the feature quantity data thereof. Gallarda discloses displaying the type of the defect (figure 3 numeral 345), thus the defect must be classified. The type of defect is output with the defect map, position, size, etc.

Regarding claim 38, Gallarda discloses displaying the type of defect (classification) on the display screen (figure 3 numeral 345).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 6,763,130 Real time defect source identification.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

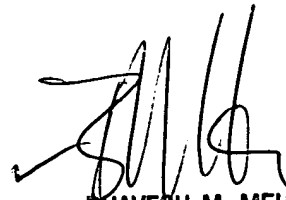
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Strege whose telephone number is (571) 272-7457. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JS



BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600